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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/790,784	MURAKAMI, NAOYA	
	Examiner	Art Unit	
	MARCUS T. RILEY	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03/10/2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *1-10 and 17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/03/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 10, 2008 has been entered.

Response to Amendment

2. This office action is responsive to the applicant's remarks received on March 10, 2008. Claims 11-16 are pending. Claims 1-10 &17 have been canceled.

Response to Arguments

3. Applicant's arguments with respect to claims 1-10 & 17 have been canceled and are withdrawn from consideration. Applicant's arguments with respect to amended claim 11 filed on March 10, 2008 has been fully considered but they are not persuasive.

A: Applicant's Remarks

Applicant respectfully submits that each of the pending claims is patentably distinguishable over the cited references as required by §103. Applicant further submits that none of the cited references, whether considered alone or in combination, discloses Applicant's

claimed image reading method including the step of ***storing a digital monochromatic signal and digital color signals that are output from the BK line sensor and the R, G and B line sensors as a black reference data with a light source turned off*** *as required by independent claims 11, 12, 14 and 16 and including the step of* ***storing a digital monochromatic signal and digital color signals that are output from the BK line sensor and the R, G and B line sensors as a white reference data with a light source turned on*** *as required by independent claims 1 l, 12 and 16. By contrast, the cited references fail to disclose, teach or suggest these claimed features. Accordingly, independent claims 11, 12, 14 and 16 and claims dependent therefrom, are patentably distinguishable over the cited references. This distinction will be further described below.*

THE CLAIMS DISTINGUISH OVER THE CITED REFERENCES

Each of the independent claims stands rejected as being unpatentable over the combination of Sakai and Ikeda or the combination of Sakai, Ikeda and Kanno. Applicant respectfully traverses the rejections of these claims, and submits that these claims are allowable for at least the following reasons.

Applicant relies on MPEP § 2143, which states that:

[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally,

the prior art reference (or references when combined) must teach or suggest all the claim limitations.

It is respectfully submitted that at least the first and third criteria of MPEP § 2143 have not been met in the Office Action.

The Cited References Do Not Suggest All Claim Recitations

Even if the first requirement of MPEP § 2143 was satisfied in the Office Action (which it is not, as explained below), the cited references still do not meet the third requirement, which is that "the prior art reference (or references when combined) must teach or suggest all the claim limitations."

Embodiments of the present invention relate to an image reading method. The image reading method according to independent claim 14 includes the step of preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors. Independent claim 14 also includes the step of storing a digital monochromatic signal and digital color signals that are output from the BK line sensor and the R, G and B line sensors as a black reference data with a light source turned off

Independent claim 16 is also directed to an image reading method including the same preparing and storing steps as independent claim 14 but also includes the step of storing a digital monochromatic signal and digital color signals that are ou~ut from the BK line sensor and the R, G and B line sensors as a white reference data with a light source turned on. Independent claims 11 and 12 which are narrower in scope than independent claim 16, each includes these claimed steps. With this arrangement, the time required for shading correction

and realizing high efficiency and high speed of the image reading operation can be realized (see, Specification, Page 3, lines 12-15). Applicant respectfully submits that the cited references fail to disclose, teach or suggest these claimed steps.

Sakai is directed to an image memory apparatus. The Office Action correctly notes that Sakai fails to disclose the claimed step of preparing a four-line CCD sensor. The Office Action then relies on the Ikeda reference to cure this deficiency. Applicant respectfully disagrees. As a preliminary matter, Applicants respectfully submit that Sakai also fails to disclose, teach or suggest storing a digital monochromatic signal and digital color signals that are output from the BK line sensor and the R, G and B line sensors as a black reference data with a light source turned off as required by the claims. Column 1, lines 24- 28 highlighted by the Examiner fails to disclose this feature. Not surprising since Sakai fails to disclose the claimed four-line CCD sensor with a BK line sensor and R, G, and B line sensors. In addition, the Sakai reference also fails to disclose, teach or suggest storing digital monochromatic signal and digital color signals that are output from the BK line sensor and the R, G and B line sensors as a white reference data with a light source turned on as required by independent claims 11, 12 and 16 for the same reason discussed above regarding the step of storing signals as black reference data.

The Ikeda and Kanno references were relied on for disclosing the steps of preparing the four line CCD sensor and executing a shading correction, respectfully. Applicant respectfully submits that neither Ikeda nor Kanno discloses storing a digital monochromatic signal and digital color signals that are output from the BK line sensor and the R, G and B line sensors as a black reference data with a light source turned off and storing digital monochromatic signal and

digital color signals that are output from the BK line sensor and the R, G and B line sensors as a white reference data with a light source turned on and were not cited for that purpose.

In view of the fact that neither the combination of Sakai and Ikeda nor the combination of Sakai, Ikeda and Kanno discloses each of the claimed steps identified above, these references cannot be said to render obvious the invention which is the subject matter of independent claims 11, 12, 14 and 16. Thus, independent claims 11, 12, 14 and 16 are allowable. Since independent claims 11, 12, 14 and 16 are allowable, claims dependent therefrom, namely claims 13 and 15 are also allowable by virtue of their direct or indirect dependence from allowable independent claims 11, 12, 14 and 16 and for containing other patentable features. Further remarks regarding the asserted relationship between any of the claims and the cited reference are not necessary in view of their allowability. Applicant's silence as to the Office Action's comments is not indicative of being in acquiescence to the stated grounds of rejection.

In sum, even if the first requirement of MPEP §2143 is satisfied, the third requirement of MPEP § 2143 is not satisfied in the Office Action, since the cited references do not teach each and every element of the present invention. Thus, the present claims are allowable.

Lack of Suggestion or Motivation to Modify or Combine the References

The Supreme Court in the KSR Int 'l Co. v. Teleflex, Inc.," 127 S.Ct. 1727 (U.S. 2007), recently clarified the standards for obviousness. For example, the Court has stated that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the art...it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in

the way the claimed new invention does." KSR at 1741. In addition, the Court in KSR stated that a reason to combine elements should be made explicit. Id. at 1740-41 .I Indeed, the Court approvingly cited In re Kahn, 441 F.3d 977 (Fed. Cir. 2006), for requiring an articulated reason. Id. at 1741.2

Sakai is devoid of any reason why one of skill in the art would incorporate the teachings of either Ikeda or Kanno into Sakai. The Office Action, states that combining the references would "provide an image processing apparatus which can precisely reproduce an original" and "provide a color image processing apparatus and a color image processing method which makes it possible to suitably convert a color." Thus, the proffered motivation, even assuming that the underlying results do in fact occur from general implementation of the teachings of Ikeda and Kanno, does not mean that the ordinary artisan would have incorporated the features of Ikeda and Kanno into Sakai.

Thus, the PTO has not properly articulated a reason for why one with ordinary skill in the art would combine the teachings ofIkeda, Kanno and Sakai. Because the PTO has not provided sufficient reasons to combine the teachings of Ikeda, Kanno and Sakai, any rejection based on this combination is improper. Accordingly, claims 11-16 are not rendered unpatentable over the prior art.

In summary, because of the lack of suggestion or motivation in the prior art to modify the reference, the first requirement of MPEP § 2143 has not been met and, hence, a prima facie case of obviousness has not been established.

Applicant respectfully submits that independent claims 11, 12, 14 and 16, and claims dependent therefrom are patentably distinguishable over the cited references and thus, allowable. Further remarks regarding the asserted relationship between any of the claims and the cited references are not necessary in view of their allowability. Applicant's silence as to the Office Action's comments is not indicative of being in acquiescence to the stated grounds of rejection.

A: Examiners Answer

Examiner submits that each of the pending claims are not patentably distinguishable over the cited references as required by 35 U.S.C. 102 or 35 U.S.C. 103. Examiner further submits that the cited references, Sakai et al. (US 5,784,180, hereinafter Sakai 180), Ikeda (US 5,550,638, hereinafter Ikeda '638) and Kanno et al. (US 6,434,266 B1 hereinafter, Kanno '266), whether considered alone or in combination, discloses Applicant's claimed image reading method including *storing a digital monochromatic signal and digital color signals that are output from the BK line sensor and the R, G and B line sensors as a black reference data with a light source turned off* (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* Sakai '180 at column 1, lines 24-28). It is well known in the art that black and white represents colors in a color image processing apparatus. Sakai teaches, discloses or even suggests a plurality of colors. Thus, the cited references teach, disclose or suggests this claimed feature. Accordingly, independent claims 11, 12, 14 and 16 and claims dependent

therefrom, are not patentably distinguishable over the cited references. Applicant's arguments with respect to amended claim 11 filed on March 10, 2008 has been fully considered but they are not persuasive.

Sakai is not devoid of any reason why one of skill in the art would incorporate the teachings of either Ikeda or Kanno into Sakai or render obvious the invention which is the subject matter of independent claims 11, 12, 14 and 16. Thus, independent claims 11, 12, 14 and 16 are not allowable. Because independent claims 11, 12, 14 and 16 are not allowable, claims dependent therefrom, namely claims 13 and 15 are also not allowable by virtue of their direct or indirect dependence from unpatentable independent claims 11, 12, 14 and 16. The first and third requirement of MPEP §2143 are satisfied and the cited references do teach each and every element of the present invention. Thus, the present claims are not allowable. For example see claim 11 below:

Sakai '180 and Ikeda '638 are combinable with Kanno '266 because they are from same field of endeavor of image processing apparatuses (*"The present invention relates to an apparatus and a method for processing color images and, more particularly, to a color image processing apparatus..."* Ikeda '638 at column 1, lines 8-10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 and Ikeda '638 by adding executing a shading correction of the monochromatic signal that is a second reflecting light received by the BK line sensor from the second sheet of the documents and output by the BK line sensor based on the second white reference data for a monochromatic signal only as taught by Kanno '266.

The motivation for doing so would have been because it advantageous to provide a color image processing apparatus and a color image processing method which makes it possible to suitably convert a color (*"...an object of the present invention is to provide a color image processing apparatus and a color image processing method which make it possible to suitably convert a color..."* Kanno '266 at column 3, lines 31-34).

Therefore, it would have been obvious to combine Sakai '180 and Ikeda '638 with Kanno '266 to obtain the invention as specified in claim 11.

Furthermore, the combination Sakai, Ikeda and Kanno does mean that the ordinary artisan would have incorporated the features of Ikeda and Kanno into Sakai.

Thus, the PTO has properly articulated a reason for why one with ordinary skill in the art would combine the teachings of Ikeda, Kanno and Sakai. Because the PTO has provided sufficient reasons to combine the teachings of Ikeda, Kanno and Sakai making rejection based on this combination is proper. Accordingly, claims 11-16 are rendered unpatentable over the prior art.

In summary, because there is proper suggestion or motivation in the combination Ikeda, Kanno and Sakai to modify the reference, the first requirement of MPEP § 2143 has been met and, hence, a prima facie case of obviousness has been established.

Examiner respectfully submits that independent claims 11, 12, 14 and 16, and claims dependent therefrom are not patentably distinguishable over the cited references and thus, not allowable.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 11, 13 & 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai et al. (US 5,784,180 hereinafter, Sakai '180) in combination with Ikeda et al. (US 5,550,638 Ikeda '638, and further in view of Kanno et al. (US 6,434,266 hereinafter Kanno '266).

Regarding claim 11; Sakai 180 discloses an image reading method, comprising: applying a light to a white reference plate from a light source when reading a first sheet of documents in a monochromatic reading mode reading monochromatic images from plural numbers of documents successively and receiving reflecting light from the white reference plate by the BK line sensor to output a digital monochromatic signal (*"The image reader 1 also includes white and black boards 8 and 9 for adjusting white and black levels of image signals, respectively. When the white and black boards 8 and 9 are irradiated with light from the halogen exposure lamp 10, predetermined density signal levels can be obtained and can be used to correct the black and white levels."* column 6, lines 24-30). See also (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0)*

in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors." column 9, lines 1-9); storing the digital monochromatic signal outputted from the BK line sensor as a first white reference data for a monochromatic signal (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); turning off the light to output a digital monochromatic signal from the BK line sensor (*"The control unit 13 performs the entire control of the color reader 1, i.e., performs control of a stepping motor driving circuit 15 for pulse-driving a stepping motor 14 for moving the scanning unit 11 through a signal line 503, performs ON/OFF control and light amount control of the halogen exposure lamp 10 by an exposure lamp driver 21 through a signal line 504, and performs control of a digitizer 16 or a display unit through a signal line 505."* column 6 , lines 38-45); storing the digital monochromatic signal outputted from the BK line sensor when the light is turned off, as a black reference data for a monochromatic signal (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); executing a shading correction of the monochromatic signal that is a first reflecting light received by the BK line sensor from the first sheet of the documents and output by the BK line sensor based on the first white reference data for a monochromatic signal and the black reference data for a monochromatic signal (*"An analog circuit 3025 amplifies analog outputs from the CCD line*

sensors 3061, 3062, and 3063 and converts these analog signals into digital signals. A generator 3026 for signal for adjustment generates a reference signal for the analog circuit 3025. A dark correction circuit 3027 performs dark correction of R, G, and B digital image signals from the analog circuit 3025. A shading correction circuit 3028 performs shading correction of an output signal from the dark correction circuit 3027. A pixel shift correction circuit 3029 corrects a main-scan pixel shift of an output signal from the shading correction circuit 3028." column 21, lines 16-26); applying the light to the white reference plate from the light source when reading a second sheet of the documents in the monochromatic reading mode and receiving the reflecting light from the white reference plate by the BK line sensor to output a digital monochromatic signal (*"The image reader 1 also includes white and black boards 8 and 9 for adjusting white and black levels of image signals, respectively. When the white and black boards 8 and 9 are irradiated with light from the halogen exposure lamp 10, predetermined density signal levels can be obtained and can be used to correct the black and white levels."* column 6, lines 24-30). See also (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors."* column 9, lines 1-9); storing the digital monochromatic signal outputted from the BK line sensor as a second white reference data for a monochromatic signal (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is*

connected to the digital color copying machine, the stored images can be checked." column 1, lines 24-28); applying a light to the white reference plate from the light source when reading a first sheet of documents in a color reading mode reading color images from plural numbers of documents successively and receiving the reflecting light from the white reference plate by the R, G and B line sensors to output digital color signals (*"The image reader 1 also includes white and black boards 8 and 9 for adjusting white and black levels of image signals, respectively. When the white and black boards 8 and 9 are irradiated with light from the halogen exposure lamp 10, predetermined density signal levels can be obtained and can be used to correct the black and white levels."* column 6, lines 24-30). See also (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors."* column 9, lines 1-9); storing the digital color signals outputted from the R, G and B line sensors as a first white reference data for color signals (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); storing the digital color signals outputted from the R, G and B line sensors when the light is turned off, as black reference data for color signals (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the*

monitor display is connected to the digital color copying machine, the stored images can be checked." column 1, lines 24-28); executing a shading correction of the color signal that is a first reflecting light received by the R, G and B line sensors from the first sheet of the documents and output by the R, G and B line sensors based on the first white reference data for color signal and the black reference data for color signal (*The R,G, and B digital signals are corrected by the shading correction circuit 3028 in the main scan direction. In addition, a pixel shift in the main scan direction is performed by the pixel shift correction circuit 3029."* column 22, lines 36-40); applying the light to the white reference plate from the light source when reading a second sheet of the documents in the color reading mode and receiving the reflecting light from the white reference plate by the R, G and B line sensors to output digital color signals (*"The image reader 1 also includes white and black boards 8 and 9 for adjusting white and black levels of image signals, respectively. When the white and black boards 8 and 9 are irradiated with light from the halogen exposure lamp 10, predetermined density signal levels can be obtained and can be used to correct the black and white levels."* column 6, lines 24-30). See also (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors."* column 9, lines 1-9); storing the digital color signals outputted from the R, G and B line sensors as a second white reference data for color signals (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color*

images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked." column 1, lines 24-28); and executing a shading correction of the color signal that is the second reflecting light received by the R, G and B line sensors from the second sheet of the documents and output by the R, G and B line sensors based on the second white reference data for color signal only (*The R,G, and B digital signals are corrected by the shading correction circuit 3028 in the main scan direction. In addition, a pixel shift in the main scan direction is performed by the pixel shift correction circuit 3029."* column 22, lines 36-40).

Sakai '180 does not expressly disclose preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors and turning off the light to output digital color signals from the R, G and B line sensors.

Ikeda '638 discloses preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors {(*"First, third, and fifth sensors (or CCDs) (58a, 60a, and 62a) are arranged on a line LA, and second and fourth sensors are arranged on a line LB separated from the line LA by four lines (63.5 .mu.m.times.4=254 .mu.m)."* column 7, lines 62-66). See also (*"...in FIG. 2, the switching signals are supplied through signal lines BHi 123, DHi 122, FHi 121, GHi 119, PHi 145, and AHi 148 as ON/OFF switching signals for the color conversion circuit B, the color correction circuit D, the character synthesizing circuit F, the image process and edit circuit G, the color balance circuit P, and the external apparatus image synthesizing circuit 502."* column 38, lines 40-46); turning off the light to output digital color signals from the R, G and B line sensors (*"The memory corresponds to the 100-dpi memory L in the entire circuit shown in FIG. 2, and is used as a means for generating switching signals for determining an 0N (executing) or OFF (not executing) state of various image process and edit modes, such as the*

above-mentioned color conversion, image trimming (non-rectangular trimming), image painting (non-rectangular painting), and the like for shapes illustrated in, e.g., FIG. 37E. More specifically,in FIG. 2, the switching signals are supplied through signal lines BHi 123, DHi 122, FHi 121, GHi 119, PHi 145, and AHi 148 as ON/OFF switching signals for the color conversion circuit B, the color correction circuit D, the character synthesizing circuit F, the image process and edit circuit G, the color balance circuit P, and the external apparatus image synthesizing circuit 502." column 38, lines 32-46).

Sakai '180 and Ikeda '638 are combinable because they are from same field of endeavor of image processing apparatuses (*"The present invention relates to an image processing apparatus which executes various processing operations of an input image to perform image edit."* Ikeda '638 at column 1, lines 13-15).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 by adding preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors and turning off the light to output digital color signals from the R, G and B line sensors as taught by Ikeda '638.

The motivation for doing so would have been because it advantageous to provide an image processing apparatus which can precisely reproduce an original image. (*"It is still another object of the present invention to provide an image processing apparatus which can precisely reproduce an original image."* Ikeda '638 at column 2, lines 17-20).

Therefore, it would have been obvious to combine Sakai '180 with Ikeda '638 to obtain the invention as specified in claim 11.

Sakai '180 and Ikeda '638 as modified does not expressly disclose executing a shading correction of the monochromatic signal that is a second reflecting light received by the BK line sensor from the second sheet of the documents and output by the BK line sensor based on the second white reference data for a monochromatic signal only.

Kanno '266 discloses executing a shading correction of the monochromatic signal that is a second reflecting light received by the BK line sensor from the second sheet of the documents and output by the BK line sensor based on the second white reference data for a monochromatic signal only (*"A shading correction circuit 1014 corrects an output non-uniformity with respect to each color of the line sensor 100 and the inclination of the quantity of light from a light source."* column 8, lines 32-35).

Sakai '180 and Ikeda '638 are combinable with Kanno '266 because they are from same field of endeavor of image processing apparatuses (*"The present invention relates to an apparatus and a method for processing color images and, more particularly, to a color image processing apparatus..."* Ikeda '638 at column 1, lines 8-10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 and Ikeda '638 by adding executing a shading correction of the monochromatic signal that is a second reflecting light received by the BK line sensor from the second sheet of the documents and output by the BK line sensor based on the second white reference data for a monochromatic signal only as taught by Kanno '266.

The motivation for doing so would have been because it advantageous to provide a color image processing apparatus and a color image processing method which makes it possible to

suitably convert a color (*"...an object of the present invention is to provide a color image processing apparatus and a color image processing method which make it possible to suitably convert a color..."* Kanno '266 at column 3, lines 31-34).

Therefore, it would have been obvious to combine Sakai '180 and Ikeda '638 with Kanno '266 to obtain the invention as specified in claim 11.

Regarding claim 13; Sakai '180 and Ikeda '638 discloses executing a shading correction of the color signals that are the reflecting light from the document received and output from the R, G and B line sensors when the second sheet of the document is judged to be a color document, based on the white reference data only (*The R, G, and B digital signals are corrected by the shading correction circuit 3028 in the main scan direction. In addition, a pixel shift in the main scan direction is performed by the pixel shift correction circuit 3029."* Sakai '180 at column 22, lines 36-40).

Sakai '180 and Ikeda '638 as modified does not expressly disclose executing a shading correction of the monochromatic signal that is the reflecting light from the document received by and output from the BK line sensor based on the white reference data and the black reference data when a second sheet of the document is judged to be a monochromatic document.

Kanno '266 discloses executing a shading correction of the monochromatic signal that is the reflecting light from the document received by and output from the BK line sensor based on the white reference data and the black reference data when a second sheet of the document is judged to be a monochromatic document (*"A shading correction circuit 1014 corrects an output*

non-uniformity with respect to each color of the line sensor 100 and the inclination of the quantity of light from a light source." column 8, lines 32-35).

Sakai '180 and Ikeda '638 are combinable with Kanno '266 because they are from same field of endeavor of image processing apparatuses (*"The present invention relates to an apparatus and a method for processing color images and, more particularly, to a color image processing apparatus..."* Ikeda '638 at column 1, lines 8-10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 and Ikeda '638 by adding executing a shading correction of the monochromatic signal that is the reflecting light from the document received by and output from the BK line sensor based on the white reference data and the black reference data when a second sheet of the document is judged to be a monochromatic document as taught by Kanno '266.

The motivation for doing so would have been because it advantageous to provide a color image processing apparatus and a color image processing method which makes it possible to suitably convert a color (*"...an object of the present invention is to provide a color image processing apparatus and a color image processing method which make it possible to suitably convert a color.."* Kanno '266 at column 3, lines 31-34).

Therefore, it would have been obvious to combine Sakai '180 and Ikeda '638 with Kanno '266 to obtain the invention as specified in claim 12.

Regarding claim 16; Sakai '180 discloses an image reading method comprising the steps: Sakai '180 storing digital color signals that are reflected light of light applied from a light source to a white reference plate and received and output by the R, G and B line sensors as white

reference data for color signals (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); storing a digital monochromatic signal that is reflected light of the light applied from the light source to the white reference plate and received and output by the BK line sensor as white reference data for a monochromatic signal (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); storing the digital color signals that are output from the R, G and B line sensors as black reference data for color signals with the light source is turned off (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); storing the digital monochromatic signal that is output from the BK line sensor as black reference data for a monochromatic signal with the light source is turned off (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); judging whether plural number of documents are monochromatic documents or color documents by sequentially scanning the documents (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals*

C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors. The select signals C0, C1, and C2 are output by the CPU 22 in accordance with an image forming sequence of the color printer 2." column 9, lines 1-11); executing a shading correction of color signals output from the R, G and B line sensors by receiving the reflecting light from the document by the R, G and B line sensors based on the white reference data for color signals and the black reference data for color signals when a first sheet of the document is judged to be a color document (*The R,G, and B digital signals are corrected by the shading correction circuit 3028 in the main scan direction. In addition, a pixel shift in the main scan direction is performed by the pixel shift correction circuit 3029."* column 22, lines 36-40).

Sakai '180 does not expressly disclose preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors.

Ikeda '638discloses preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors {(*"First, third, and fifth sensors (or CCDs) (58a, 60a, and 62a) are arranged on a line LA, and second and fourth sensors are arranged on a line LB separated from the line LA by four lines (63.5 .mu.m.times.4=254 .mu.m)."* column 7, lines 62-66). and see also (*"...in FIG. 2, the switching signals are supplied through signal lines BHi 123, DHi 122, FHi 121, GHi 119, PHi 145, and AHi 148 as ON/OFF switching signals for the color conversion circuit B, the color correction circuit D, the character synthesizing circuit F, the image process*

and edit circuit G, the color balance circuit P, and the external apparatus image synthesizing circuit 502." column 38, lines 40-46).

Sakai '180 and Ikeda '638 are combinable because they are from same field of endeavor of image processing apparatuses (*"The present invention relates to an image processing apparatus which executes various processing operations of an input image to perform image edit."* Ikeda '638 at column 1, lines 13-15).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 by adding preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors as taught by Ikeda '638.

The motivation for doing so would have been because it advantageous to provide an image processing apparatus which can precisely reproduce an original image. (*"It is still another object of the present invention to provide an image processing apparatus which can precisely reproduce an original image."* Ikeda '638 at column 2, lines 17-20).

Therefore, it would have been obvious to combine Sakai '180 with Ikeda '638 to obtain the invention as specified in claim 16.

Sakai '180 and Ikeda '638 as modified does not expressly disclose executing a shading correction of a monochromatic signal output from the BK line sensor by receiving the light from the document by the BK line sensor based on the monochromatic white reference data for a monochromatic signal and the black reference data for a monochromatic signal when the first sheet of the document is judged to be a monochromatic document.

Kanno '266 and executing a shading correction of a monochromatic signal output from the BK line sensor by receiving the light from the document by the BK line sensor based on the monochromatic white reference data for a monochromatic signal and the black reference data for a monochromatic signal when the first sheet of the document is judged to be a monochromatic document (*"A shading correction circuit 1014 corrects an output non-uniformity with respect to each color of the line sensor 100 and the inclination of the quantity of light from a light source."* column 8, lines 32-35).

Sakai '180 and Ikeda '638 are combinable with Kanno '266 because they are from same field of endeavor of image processing apparatuses ("The present invention relates to an apparatus and a method for processing color images and, more particularly, to a color image processing apparatus…" Ikeda '638 at column 1, lines 8-10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 and Ikeda '638 by adding executing a shading correction of a monochromatic signal output from the BK line sensor by receiving the light from the document by the BK line sensor based on the monochromatic white reference data for a monochromatic signal and the black reference data for a monochromatic signal when the first sheet of the document is judged to be a monochromatic document as taught by Kanno '266.

The motivation for doing so would have been because it advantageous to provide a color image processing apparatus and a color image processing method which makes it possible to suitably convert a color (*"…an object of the present invention is to provide a color image*

processing apparatus and a color image processing method which make it possible to suitably convert a color.." Kanno '266 at column 3, lines 31-34).

Therefore, it would have been obvious to combine Sakai '180 and Ikeda '638 with Kanno '266 to obtain the invention as specified in claim 16.

6. **Claims 12, 14 & 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai '180 in combination with Ikeda '638.

Regarding claim 12; Sakai '180 discloses an image reading method, comprising: applying a light to a white reference plate from a light source and receiving reflecting light from the white reference plate by the BK line sensor and R, G and B line sensors to output a digital monochromatic signal and digital color signals (*"The image reader 1 also includes white and black boards 8 and 9 for adjusting white and black levels of image signals, respectively. When the white and black boards 8 and 9 are irradiated with light from the halogen exposure lamp 10, predetermined density signal levels can be obtained and can be used to correct the black and white levels."* column 6, lines 24-30). See also (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors."* column 9, lines 1-9); storing the digital monochromatic signal and the digital color signals as white reference data (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color*

copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked." column 1, lines 24-28); turning off the light to output a digital monochromatic signal from the BK line sensor and color signals from the R, G and B line sensors (*"The control unit 13 performs the entire control of the color reader 1, i.e., performs control of a stepping motor driving circuit 15 for pulse-driving a stepping motor 14 for moving the scanning unit 11 through a signal line 503, performs ON/OFF control and light amount control of the halogen exposure lamp 10 by an exposure lamp driver 21 through a signal line 504, and performs control of a digitizer 16 or a display unit through a signal line 505."* column , lines); storing the digital monochromatic signal outputted from the BK line sensor and the color signals from the R, G and B line sensors when the light is turned off, as black reference data (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28); judging whether plural number of documents are monochromatic documents or color documents by sequentially scanning the documents (*"A selector 63 selects one of outputs a, b, and c on the basis of a truth table in FIG. 10B in response to select signals C0 and C1 (567 and 568). The select signals C0 and C1 and a select signal C2 correspond to color signals to be output. These signals (C2,C1,C0) are output as (0,0,0), (0,0,1), (0,1,0), and (1,0,0) in an order of, e.g., Y, M, C, and Bk. These signals are also output as (0,1,1) serving as a monochromatic signal, thereby obtaining color signals corrected to desired colors. The select signals C0, C1, and C2 are output by the CPU 22 in accordance with an image forming sequence of the color printer 2."* column 9,

lines 1-11); executing a shading correction of the monochromatic image signal that is the reflecting light from the document received and output by the BK line sensor based on the white reference data and the black reference data when a first sheet of the document is judged to be a monochromatic document (*The R,G, and B digital signals are corrected by the shading correction circuit 3028 in the main scan direction. In addition, a pixel shift in the main scan direction is performed by the pixel shift correction circuit 3029."* column 22, lines 36-40); and executing a shading correction of the color signal that is the reflecting light received and output by the R, G and B line sensors based on the white reference data only when the first sheet of the document is judged to be a color document (*The R,G, and B digital signals are corrected by the shading correction circuit 3028 in the main scan direction. In addition, a pixel shift in the main scan direction is performed by the pixel shift correction circuit 3029."* column 22, lines 36-40).

Sakai '180 does not expressly disclose preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors.

Ikeda '638 discloses preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors {(*"First, third, and fifth sensors (or CCDs) (58a, 60a, and 62a) are arranged on a line LA, and second and fourth sensors are arranged on a line LB separated from the line LA by four lines (63.5 .mu.m.times.4=254 .mu.m)."* column 7, lines 62-66). See also (*"...in FIG. 2, the switching signals are supplied through signal lines BHi 123, DHi 122, FHi 121, GHi 119, PHi 145, and AHi 148 as ON/OFF switching signals for the color conversion circuit B, the color correction circuit D, the character synthesizing circuit F, the image process and edit circuit G, the color balance circuit P, and the external apparatus image synthesizing circuit 502."* column 38, lines 40-46).

Sakai '180 and Ikeda '638 are combinable because they are from same field of endeavor of image processing apparatuses (*"The present invention relates to an image processing apparatus which executes various processing operations of an input image to perform image edit."* Ikeda '638 at column 1, lines 13-15).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 by adding preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors as taught by Ikeda '638.

The motivation for doing so would have been because it advantageous to provide an image processing apparatus which can precisely reproduce an original image. (*"It is still another object of the present invention to provide an image processing apparatus which can precisely reproduce an original image."* Ikeda '638 at column 2, lines 17-20).

Therefore, it would have been obvious to combine Sakai '180 with Ikeda '638 to obtain the invention as specified in claim 12.

7. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai '180 and Ikeda '638 as applied to claim12 above, and further in view of Kanno '266.

Regarding claim 14; Sakai '180 discloses an image reading method, comprising: storing a digital monochromatic signal and digital color signals that are output from the BK line sensor and the R, G and B line sensors as a black reference data with a light source turned off when a first copy is preferential among the first copy being preferential and a ready time being preferential, at the time when power is turned ON (*"In such a system, data stored in the color*

image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked." column 1, lines 24-28);

Sakai '180 does not expressly disclose preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors.

Ikeda '638 preparing a four-line CCD sensor comprising a BK line sensor and R, G and B line sensors {(*"First, third, and fifth sensors (or CCDs) (58a, 60a, and 62a) are arranged on a line LA, and second and fourth sensors are arranged on a line LB separated from the line LA by four lines (63.5 .mu.m.times.4=254 .mu.m)."* column 7, lines 62-66). See also (*"...in FIG. 2, the switching signals are supplied through signal lines BHi 123, DHi 122, FHi 121, GHi 119, PHi 145, and AHi 148 as ON/OFF switching signals for the color conversion circuit B, the color correction circuit D, the character synthesizing circuit F, the image process and edit circuit G, the color balance circuit P, and the external apparatus image synthesizing circuit 502."* column 38, lines 40-46).

Sakai '180 and Ikeda '638 are combinable because they are from same field of endeavor of image processing apparatuses (*"The present invention relates to an image processing apparatus which executes various processing operations of an input image to perform image edit."* Ikeda '638 at column 1, lines 13-15).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Sakai '180 by adding preparing a

four-line CCD sensor comprising a BK line sensor and R, G and B line sensors as taught by Ikeda '638.

The motivation for doing so would have been because it advantageous to provide an image processing apparatus which can precisely reproduce an original image. (*"It is still another object of the present invention to provide an image processing apparatus which can precisely reproduce an original image."* Ikeda '638 at column 2, lines 17-20).

Therefore, it would have been obvious to combine Sakai '180 with Ikeda '638 to obtain the invention as specified in claim 12.

Regarding claim 15; Sakai '180 discloses storing a digital monochromatic signal and digital color signals that are reflecting light of the light applied to a white reference plate from the light source and then received and output by the BK line sensor and the R, G and B line sensors as a white reference data when the first copy is preferential at the time when power is turned ON (*"In such a system, data stored in the color image memory apparatus is repeatedly sent to the digital color copying machine to obtain a plurality of color images. In addition, when the monitor display is connected to the digital color copying machine, the stored images can be checked."* column 1, lines 24-28).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARCUS T. RILEY whose telephone number is (571)270-1581. The examiner can normally be reached on Monday - Friday, 7:30-5:00, est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler L. Haskins can be reached on 571-272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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